

CLAIMS

1. A suspension comprising a multilayered plate member formed by at least three layers laminated together, modulus of elasticity of neighbor layers of said at least three layers being different from each other, both side edges of only a part of the layers of said multilayered plate member within a stiffness required region being bent to form ribs.
2. The suspension as claimed in claim 1, wherein both side edges of only a surface layer of said multilayered plate member within a stiffness required region are bent to form ribs.
3. The suspension as claimed in claim 1, wherein both side edges of only a surface layer and its neighbor layer of said multilayered plate member within a stiffness required region are bent to form ribs.
4. The suspension as claimed in claim 1, wherein at least one layer of said multilayered plate member has a plane shape different from that of the other layer of said multilayered plate member.
5. The suspension as claimed in claim 1, wherein said multilayered plate member comprises a first thin metal plate

layer, a resin layer laminated on said first thin metal plate layer, and a second thin metal plate layer laminated on said resin layer.

6. The suspension as claimed in claim 1, wherein said multilayered plate member comprises a first thin metal plate layer, a second thin metal plate layer laminated on said first thin metal plate layer and provided with an elasticity coefficient different from that of said first thin metal plate layer, and a third thin metal plate layer laminated on said second thin metal plate layer and provided with an elasticity coefficient different from that of said second thin metal plate layer.

7. The suspension as claimed in claim 1, wherein said multilayered plate member comprises a first thin metal plate layer, a first resin layer laminated on said first thin metal plate layer, a second thin metal plate layer laminated on said first resin layer, a second resin layer laminated on said second thin metal plate layer, and a third thin metal plate layer laminated on said second resin layer.

8. The suspension as claimed in claim 1, wherein said multilayered plate member comprises a first thin metal plate layer, a second thin metal plate layer laminated on said first

thin metal plate layer and provided with an elasticity coefficient different from that of said first thin metal plate layer, a third thin metal plate layer laminated on said second thin metal plate layer and provided with an elasticity coefficient different from that of said second thin metal plate layer, a fourth thin metal plate layer laminated on said third thin metal plate layer and provided with an elasticity coefficient different from that of said third thin metal plate layer, and a fifth thin metal plate layer laminated on said fourth thin metal plate layer and provided with an elasticity coefficient different from that of said fourth thin metal plate layer.

9. A suspension comprising:

a multilayered plate member formed by at least three layers laminated together, modulus of elasticity of neighbor layers of said at least three layers being different from each other; and

a reinforce member laminated on only both side edge sections of a surface layer of said multilayered plate member within a stiffness required region.

10. The suspension as claimed in claim 9, wherein said reinforce member comprises a single layer structure of a thin metal layer or a resin layer.

11. The suspension as claimed in claim 9, wherein said reinforce member comprises a multilayered plate member with a thin metal plate layer and a resin layer laminated on said thin metal plate layer.

12. The suspension as claimed in claim 9, wherein said reinforce member comprises a multilayered plate member with a first thin metal plate layer, and a second thin metal plate layer laminated on said first thin metal plate layer and provided with an elasticity coefficient different from that of said first thin metal plate layer.

13. The suspension as claimed in claim 9, wherein at least one layer of said multilayered plate member has a plane shape different from that of the other layer of said multilayered plate member.

14. The suspension as claimed in claim 9, wherein said multilayered plate member comprises a first thin metal plate layer, a resin layer laminated on said first thin metal plate layer, and a second thin metal plate layer laminated on said resin layer.

15. The suspension as claimed in claim 9, wherein said

multilayered plate member comprises a first thin metal plate layer, a second thin metal plate layer laminated on said first thin metal plate layer and provided with an elasticity coefficient different from that of said first thin metal plate layer, and a third thin metal plate layer laminated on said second thin metal plate layer and provided with an elasticity coefficient different from that of said second thin metal plate layer.

16. The suspension as claimed in claim 9, wherein said multilayered plate member comprises a first thin metal plate layer, a first resin layer laminated on said first thin metal plate layer, a second thin metal plate layer laminated on said first resin layer, a second resin layer laminated on said second thin metal plate layer, and a third thin metal plate layer laminated on said second resin layer.

17. The suspension as claimed in claim 9, wherein said multilayered plate member comprises a first thin metal plate layer, a second thin metal plate layer laminated on said first thin metal plate layer and provided with an elasticity coefficient different from that of said first thin metal plate layer, a third thin metal plate layer laminated on said second thin metal plate layer and provided with an elasticity coefficient different from that of said second thin metal

plate layer, a fourth thin metal plate layer laminated on said third thin metal plate layer and provided with an elasticity coefficient different from that of said third thin metal plate layer, and a fifth thin metal plate layer laminated on said fourth thin metal plate layer and provided with an elasticity coefficient different from that of said fourth thin metal plate layer.

18. A head gimbal assembly comprising:

a suspension including a multilayered plate member formed by at least three layers laminated together, modulus of elasticity of neighbor layers of said at least three layers being different from each other, both side edges of only a part of the layers of said multilayered plate member within a stiffness required region being bent to form ribs; and

a head slider with at least one head element, said head slider being mounted on said suspension.

19. The head gimbal assembly as claimed in claim 18, wherein both side edges of only a surface layer of said multilayered plate member within stiffness required region are bent to form ribs.

20. The head gimbal assembly as claimed in claim 18, wherein both side edges of only a surface layer and its

neighbor layer of said multilayered plate member within stiffness required region are bent to form ribs.

21. The head gimbal assembly as claimed in claim 18, wherein said multilayered plate member comprises a first thin metal plate layer, a resin layer laminated on said first thin metal plate layer, and a second thin metal plate layer laminated on said resin layer.

22. A head gimbal assembly comprising:

a suspension including a multilayered plate member formed by at least three layers laminated together, modulus of elasticity of neighbor layers of said at least three layers being different from each other, and a reinforce member laminated on only both side edge sections of a surface layer of said multilayered plate member within a stiffness required region; and

a head slider with at least one head element, said head slider being mounted on said suspension.

23. The head gimbal assembly as claimed in claim 22, wherein said reinforce member comprises a single layer structure of a thin metal layer or a resin layer.

24. The head gimbal assembly as claimed in claim 22,

wherein said reinforce member comprises a multilayered plate member with a thin metal plate layer and a resin layer laminated on said thin metal plate layer.

25. The head gimbal assembly as claimed in claim 22, wherein said multilayered plate member comprises a first thin metal plate layer, a resin layer laminated on said first thin metal plate layer, and a second thin metal plate layer laminated on said resin layer.

26. A disk drive apparatus with at least one head gimbal assembly comprising:

a suspension including a multilayered plate member formed by at least three layers laminated together, modulus of elasticity of neighbor layers of said at least three layers being different from each other, both side edges of only a part of the layers of said multilayered plate member within a stiffness required region being bent to form ribs; and

a head slider with at least one head element, said head slider being mounted on said suspension.

27. The disk drive apparatus as claimed in claim 26, wherein both side edges of only a surface layer of said multilayered plate member within a stiffness required region are bent to form ribs.

28. The disk drive apparatus as claimed in claim 26, wherein both side edges of only a surface layer and its neighbor layer of said multilayered plate member within a stiffness required region are bent to form ribs.

29. The disk drive apparatus as claimed in claim 26, wherein said multilayered plate member comprises a first thin metal plate layer, a resin layer laminated on said first thin metal plate layer, and a second thin metal plate layer laminated on said resin layer.

30. A disk drive apparatus with at least one head gimbal assembly comprising:

a suspension including a multilayered plate member formed by at least three layers laminated together, modulus of elasticity of neighbor layers of said at least three layers being different from each other, and a reinforce member laminated on only both side edge sections of a surface layer of said multilayered plate member within a stiffness required region; and

a head slider with at least one head element, said head slider being mounted on said suspension.

31. The disk drive apparatus as claimed in claim 30,

wherein said reinforce member comprises a single layer structure of a thin metal layer or a resin layer.

32. The disk drive apparatus as claimed in claim 30, wherein said reinforce member comprises a multilayered plate member with a thin metal plate layer and a resin layer laminated on said thin metal plate layer.

33. The disk drive apparatus as claimed in claim 30, wherein said multilayered plate member comprises a first thin metal plate layer, a resin layer laminated on said first thin metal plate layer, and a second thin metal plate layer laminated on said resin layer.